



Volunteer Lake Assessment Program Individual Lake Reports

MASSASECUM, LAKE, BRADFORD, NH

MORPHOMETRIC DATA

| | | | | | | | | |
|-----------------------|-------|---------------------------|-----------|-----------------------------------|------|------|---------------|----------------------|
| Watershed Area (Ac.): | 6,044 | Max. Depth (m): | 16.4 | Flushing Rate (yr ⁻¹) | 2 | Year | Trophic class | Known Exotic Species |
| Surface Area (Ac.): | 402 | Mean Depth (m): | 3.8 | P Retention Coef: | 0.59 | 1987 | MESOTROPHIC | Variable Milfoil |
| Shore Length (m): | 6,400 | Volume (m ³): | 6,229,000 | Elevation (ft): | 631 | 2005 | MESOTROPHIC | |

TROPHIC CLASSIFICATION

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

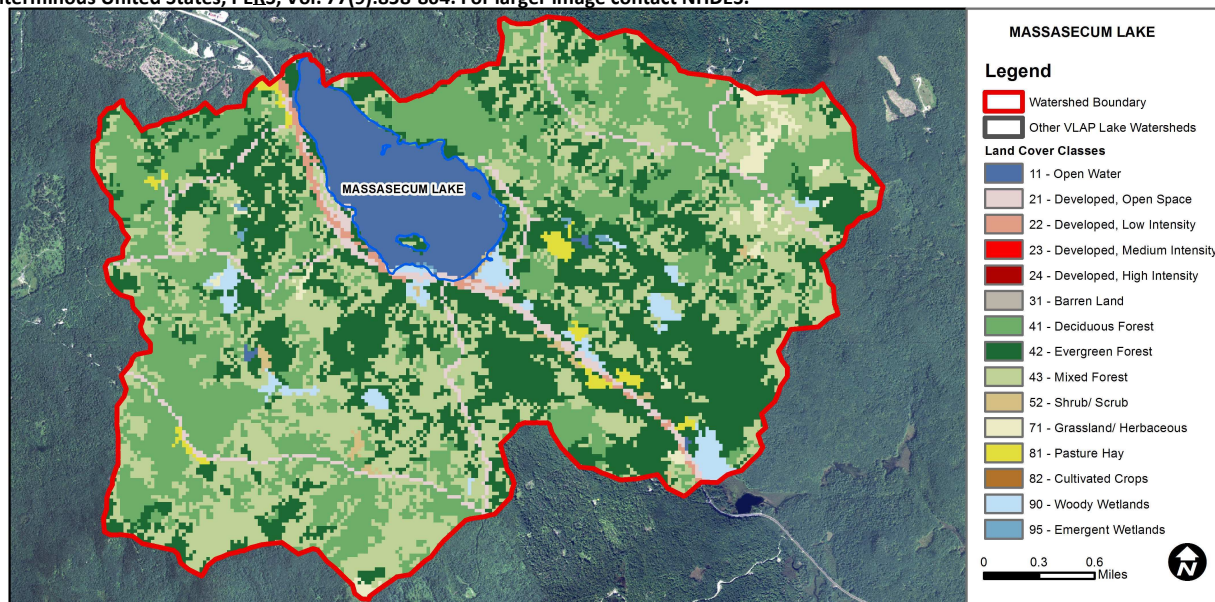
| Designated Use | Parameter | Category | Comments |
|----------------------------|--------------------|--------------|---|
| Aquatic Life | Phosphorus (Total) | Very Good | >5 samples and median is < 1/2 threshold. |
| | pH | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | D.O. (mg/L) | Encouraging | < 10 samples and no exceedance of criteria. More data needed. |
| | D.O. (% sat) | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | Chlorophyll-a | Good | >=5 samples and median is < threshold but > 1/2 threshold value. |
| Primary Contact Recreation | E. coli | Very Good | All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria. |
| | Chlorophyll-a | Very Good | At least 10 samples with 0 exceedances of criteria. |

BEACH PRIMARY CONTACT ASSESSMENT STATUS

| | | | |
|--|---------|--------------|---|
| LAKE MASSASECUM - CAMP PIESAULE BEACH | E. coli | Very Good | All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria. |
| LAKE MASSASECUM - FRENCH'S PARK TOWN BEACH | E. coli | Slightly Bad | Slightly exceeds criteria. |
| LAKE MASSASECUM - MASSASECUM CASINO BEACH | E. coli | Very Good | All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria. |

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



| Land Cover Category | % Cover | Land Cover Category | % Cover | Land Cover Category | % Cover |
|----------------------------|---------|---------------------|---------|----------------------|---------|
| Open Water | 7.14 | Barren Land | 0 | Grassland/Herbaceous | 1.22 |
| Developed-Open Space | 3.22 | Deciduous Forest | 27.57 | Pasture Hay | 0.81 |
| Developed-Low Intensity | 0.67 | Evergreen Forest | 28.23 | Cultivated Crops | 0 |
| Developed-Medium Intensity | 0 | Mixed Forest | 28.68 | Woody Wetlands | 1.96 |
| Developed-High Intensity | 0 | Shrub-Scrub | 0.43 | Emergent Wetlands | 0.13 |

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

LAKE MASSASECUM, BRADFORD, NH

2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were relatively low and less than the NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- ♣ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were elevated in Frenches Park and Davis Brooks.
- ♣ **E. COLI:** E. coli levels were well below the state standard for surface waters.
- ♣ **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low and historical trend analysis indicates a relatively stable epilimnetic (upper water layer) phosphorus level since monitoring began. Davis Brook phosphorus levels were slightly elevated likely due to wetland influences. Howlett Brook phosphorus was slightly elevated in August likely due to sediments as turbidity was also elevated.
- ♣ **TRANSPARENCY:** Transparency improved in August and average transparency was greater than the NH lake median. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- ♣ **TURBIDITY:** Turbidity was elevated in Howlett Brook in August likely due to low stream flows and sediment contamination.
- ♣ **pH:** Deep spot pH levels were lower than desirable and potentially critical to aquatic life.
- ♣ **RECOMMENDED ACTIONS:** Conduct chloride monitoring at Davis and Frenches Park Brooks to establish baseline data sets. Keep up the great work!

| Station Name | Table 1. 2012 Average Water Quality Data for MASSASECUM LAKE | | | | | | | | | |
|---------------------|--|---------|----------|-------|---------|---------|--------|------|-------|-----|
| | Alk. | Chlor-a | Chloride | Cond. | E. Coli | Total P | Trans. | | Turb. | pH |
| | mg/l | ug/l | mg/l | uS/cm | #/100ml | ug/l | m | | ntu | |
| | | | | | | | NVS | VS | | |
| Babcock Brook | | | | 50.4 | | 12 | | | 0.45 | 6.5 |
| Colby Brook | | | | 30.3 | | 14 | | | 0.43 | 6.8 |
| Davis Brook | | | | 89.7 | 70 | 27 | | | 1.46 | 6.0 |
| Davis Brook #2 | | | | | 25 | | | | | |
| Deep Epilimnion | 3.9 | 3.87 | 5 | 39.9 | | 5 | 5.25 | 5.63 | 0.48 | 6.4 |
| Deep Metalimnion | | | | 40.1 | | 8 | | | 0.61 | 5.9 |
| Deep Hypolimnion | | | | 43.2 | | 9 | | | 1.83 | 5.9 |
| Frenches Park Brook | | | | 168.8 | | 6 | | | 0.84 | 6.7 |
| Howlett Brook | | | | 42.9 | | 17 | | | 1.95 | 6.8 |
| Melvin Bk Outlet | | | | 41.5 | | 7 | | | 0.59 | 6.7 |

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

| Parameter | Trend | Explanation |
|-------------------------|--------|--|
| Chlorophyll-a | Stable | Data not significantly increasing or decreasing. |
| Transparency | Stable | Data not significantly increasing or decreasing. |
| Phosphorus (epilimnion) | Stable | Data not significantly increasing or decreasing. |

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